

Property Rights, Collective Action and Plant Genetic Resources



Conservation of genetic resources contributes to plant genetic diversity, which includes both the combination of species in agricultural ecosystems, as well as the number of different varieties within a species (genetic diversity).

Loss of biodiversity in cultivated and wild species can increase plant vulnerability to insect pests and diseases, worsen nutrition through declines in the variety of foods available, reduce the capacity of plant resources to adapt to changing conditions, and lead to loss of local knowledge about diversity. These effects can in turn reduce food security, threaten the sustainability of agricultural production systems, and jeopardize the livelihoods of rural communities today and for generations to come.

Factors that affect the conservation of biodiversity include demographic changes, technological developments, national agricultural policies, and economic, social, and cultural factors. Institutional aspects related to property rights and collective action play a key role in local plant genetic conservation outcomes.

SOURCE:

Eyzaguirre, P., N. McCarthy, M. Di Gregorio and E. Dennis. 2004. *Collective Action and Property Rights for Sustainable Development: Property Rights, Collective Action, and Plant Genetic Resources*. 2020 Focus Brief 11, International Food Policy Research Institute, Washington, D.C.

Property Rights to Land-Based Resources

Access to land and water is crucial for the conservation of genetic resources. In particular, land tenure and water rights are likely to affect *in situ* conservation (conservation in natural surroundings) for a variety of reasons:

- The type and strength of property rights arrangements affect farmers' time horizon and investment choices and, as a consequence, crop diversity.
- Stronger land use and management rights for farmers can increase their ability to grow a variety of crops. Where farmers' investments are crop-specific, however, security of property rights might lead to less diversified cropping patterns.
- Property rights, together with available genetic resources, affect people's capacity to manage variability and risk. Many traditional communities present "patchwork landscapes" with various ecological niches that favor the use of unique varieties and plant types adapted to those niches. High genetic diversity reduces risk, and access to a diverse pool of plant genetic resources improves the long-term resilience of the agricultural production system in the face of adverse shocks like drought.

Formal property rights often coexist with and differ from locally exercised property rights. The existence of different overlapping arrangements and regulatory frameworks (legal pluralism) must be taken into account in order to assess their effects on biodiversity conservation. For example, in Ethiopia, sacred groves managed by the Christian Coptic churches not only provide landless people with access to non-timber forest products, but also assure protection to areas with some of the highest amounts of biodiversity in the country.

Positive and Negative Impacts of Property Rights Regimes

Different property rights regimes have different advantages and disadvantages for biodiversity conservation. For example, local forest and pasture resources held as common property enable farmers to avail themselves of a much wider range of resources than they could use if all land were cultivated.



Common property rights provide landless poor in Kenya with access to indigenous fruits and vegetables, and foster their conservation.

State imposition of new property rights regimes that fail to account for traditional rights can also affect the maintenance of local knowledge of specific varieties. For example, in 1975, a forest ecosystem in Uzbekistan was converted to a protected nature reserve. As a consequence, the surrounding communities lost access rights to this land, which contained a wild plant species that had been used locally to cure heart ailments. Having lost access to this wild species, the local people over time lost knowledge about the health properties of this plant, and with that a low-cost health remedy.

Traditional Genetic Resources and Property

In Kenya, indigenous leafy vegetables are an important resource for food security. The genetic resources of these species are found and used in both wild and cultivated landscapes. The plant *Amaranthus graecizans L.* is collected from the wild in communal areas along roadsides and rivers, but seldom is cultivated in gardens. Common property rights provide landless poor with access and foster local conservation of this unique genetic resource. Often, when access to communal areas is restricted, not only are livelihoods affected, but also species lose their value as the traditions associated with them disappear.

The Role of Collective Action

Whereas the state sector can sustain *ex situ* conservation (collection and storage of genetic resources to ensure availability in the future), *in situ* conservation requires coordination by farmers and other actors. Both formal and informal networks can work to increase access to diversity and availability of genetic variation, or they can work in conflicting ways, thus reducing diversity. In marginalized and remote areas where farmers' own seed systems continue to play a major role in meeting their heterogeneous needs for seed supply, collective action is especially important.

Germplasm information is composed of both scientific and local knowledge. Local-level collective action can provide the means to facilitate the maintenance of traditional knowledge. Farmers' organizations for seed management, local seed exchange networks, and seed fairs increase the information available about plant genetic resources, contribute to local capacity to conserve local crop varieties, and increase the possibilities for improving local varieties.

Finally, a group of farmers should be able to maintain more diversity with a higher chance of accessing new populations and a lower probability of loss of populations than any individual. Strengthening local capacity to undertake collective action may thus allow farmers and communities to maintain greater genetic resource diversity.



Intellectual property rights allow local indigenous communities to protect and share in the benefits from local genetic resources.

Farmers' Indigenous Rights to Genetic Resources

Local conservation efforts are also affected by international policies on the development of intellectual property rights for genetic resources. Intellectual property rights, like all other property rights, provide the rights to the stream of benefits (including income) from the resource in question. Article 8 of the Convention on Biological Diversity affirms the rights of local indigenous communities to access and benefit from local genetic resources. The recently signed International Treaty on Plant Genetic Resources for Food and Agriculture also addresses intellectual property rights to allow local communities to access and benefit from local genetic resources.

Public policies have paid significant attention to private ownership, and commercial incentives underpin genetic resource innovation using biotechnology. It has, however, paid less attention to property rights of agrarian communities and cultures for whom genetic resources are essential livelihood assets.

In the case of biotechnology, genetic resource innovations are treated as individual property. On the other hand, farming communities use genetic resources to meet a variety of livelihood, environmental, and cultural needs, and innovations in genetic resources over time are often the product of long-term collective efforts, such that no single individual can claim to be the owner or originator of the innovation process and the resulting genetic resources.

The rules assigning property rights over genetic resources to individuals or groups of users will affect people's livelihoods. One risk of failing to recognize local indigenous rights is that external actors might appropriate exclusive rights over genetic resources they did not in fact, "innovate". Given the neglect of property rights of agrarian communities and cultures, collective action can help empower farmers to demand that government bodies guarantee rights to local genetic diversity to farmers. The other side of the coin is that collective action can also be used to limit use of germplasm by others, thereby worsening access and benefits to society as a whole.



Collective action can help empower farmers to demand that governments recognize farmers' rights to local genetic resources.

Risks and Problems of Exclusive Property Rights to Genetic Resources

Even if local groups have legally-recognized rights to genetic resources, privatization itself can lead to reduced availability of germplasm. In particular, assigning exclusive property rights to germplasm might reduce access to plant genetic material for everyone, and particularly for poorer farmers. Often, less informed, less well educated, and marginalized rural populations are at a disadvantage in claiming ownership.

Policymakers should be aware of the links between property rights, collective action, and local conservation of local plant genetic diversity. In order to avoid eroding genetic diversity and increasing the vulnerability of the poor, it is important to take into account local regulatory frameworks as well as the existence and overlap of multiple legal systems. It is necessary to build on these regulatory frameworks, and avoid policies that might reduce access to genetic diversity for local populations.

Suggested Readings

Brush, S. (ed.). 2000. *Genes in the Field: On-Farm Conservation of Crop Diversity*. Ottawa, Canada: International Development Research Centre.

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